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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/029,261 | 12/28/2001 | Jae Woo Lyu | P-0312 | 4115 |
| 34610 | 7590 | 07/26/2005 | EXAMINER | |
| FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153 | | | PHAN, HANH | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2638 | |

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|--------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/029,261 | LYU, JAE WOO | |
| | Examiner | Art Unit | |
| | Hanh Phan | 2638 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-13, 15-24, 26 and 27 is/are rejected.
- 7) ☒ Claim(s) 4-6, 25 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 03/08/2005.
2. In claim 23, line 11, the phrase "the second baseband digital optical signal" should be changed to -- the output baseband digital optical signal --.

In claim 23, line 12, the phrase "demodulate the output baseband digital electrical signal" should be changed to -- demodulate the third baseband digital electrical signal--.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 7-12, 15, 16, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rideout et al (US Patent No. 5,880,863) in view of Prior Art Figure 1 and further in view of Morita (US Patent No. 6,498,664).

Regarding claims 1, 10 and 26, referring to Figures 2, 3A, 3B, 4A, 4B and 4C, Rideout teaches an optical repeater system (Fig. 2), comprising:

a plurality of optical repeaters (i.e., remote unit 1 to remote mote unit N, Fig. 4A) coupled in series, each configured to receive a corresponding different radio frequency (RF) analog signal (i.e., remote unit #2 receives a first RF analog signal from antenna

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104, Fig. 4A), sum (i.e., combiner 116, Fig. 4A) the first RF analog signal and a second RF analog signal transmitted from a previous optical repeater in the series to generate an optical output signal (see Fig. 4A, col. 7, lines 28-60 and col. 8, lines 47-55); and

a base station (i.e., base station 22, Fig. 2) configured to receive and demodulate the optical output signal of a last one of the plurality of optical repeaters in the series (see Fig. 4B).

Rideout differs from claims 1, 10 and 26 in that he fails to specifically teach converting a RF analog signal to a base band digital electrical signal and a digital summer for summing the baseband digital electrical signals. However, the Prior Art Figure 1 teaches a frequency converter 350 which can convert a Rf analog signal to a baseband digital electrical signal and Morita in US Patent No. 6,498,664 teaches a digital summer (i.e., MUX 66, Fig. 5) for summing the baseband digital electrical signals (i.e., STM-M #1 to STM-M #4, Fig. 5, see col. 1, lines 37-41, col. 2, lines 24-28 and col. 5, lines 4-15). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the converting a RF analog signal to a base band digital electrical signal and a digital summer for summing the baseband digital electrical signals as taught by the Prior Art Figure 1 and Morita in the system of Rideout. One of ordinary skill in the art would have been motivated to do this since the Prior Art Figure 1 and Morita suggest that using such the converting a RF analog signal to a base band digital electrical signal and a digital summer for summing the baseband digital electrical signals have advantage of allowing converting a analog signal to a

digital signal and providing an optical communication system with high speed and high capacity.

Regarding claims 2, 11 and 15, the combination of Rideout, Prior Art Figure 1 and Morita teaches the second baseband digital electrical signal transmitted from a previous optical repeater in the series is a previously summed signal (Figs. 2 and 3A, of Rideout, and Fig. 5 of Morita).

Regarding claim 3, Rideout further teaches the series connection comprises a daisy chain connection (Fig. 2).

Regarding claims 7 and 27, Rideout further teaches each of the plurality of optical repeaters (i.e., remote unit #1 to remote unit #n, Fig. 2) is coupled with at least one other of the plurality of optical repeaters by an optical link.

Regarding claim 8, Rideout further teaches the optical link comprises an optical cable (Fig. 2).

Regarding claims 9 and 16, Rideout further teaches the last optical repeater is coupled with the base station by an optical cable (Fig. 2).

Regarding claim 12, the combination of Rideout, Prior Art Figure 1 and Morita teaches amplifying the RF analog signal with a prescribed gain in accordance with an automatic gain control circuit to maintain a prescribed amplitude of the amplified RF analog signal (see Prior Art Figure 1).

5. Claims 13 and 17-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Rideout et al (US Patent No. 5,880,863) and Prior Art Figure 1 in view of Morita (US Patent No. 6,498,664) and further in view of Bassirat (US Patent No. 6,507,741).

Regarding claims 13 and 17-24, Rideout as modified by Prior Art and Morita differs from claims 13 and 17-24 in that he fails to teach the first baseband digital signal is delayed to match a round trip delay time of at least one other optical repeater coupled in series. However, Bassirat in US Patent No. 6,507,741 teaches the first baseband digital signal is delayed to match a round trip delay time of at least one other optical repeater coupled in series (Figs. 4b, 4c, 4d, 5a and 5b, col. 8, lines 29-41). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first baseband digital signal is delayed to match a round trip delay time of at least one other optical repeater coupled in series as taught by Bassirat in the system of Rideout modified by Prior Art Figure 1 and Morita. One of ordinary skill in the art would have been motivated to do this since Bassirat suggest in column 8, lines 29-41 that using such the delay device has advantage of allowing determining the location of the subscriber station.

Regarding claim 25, Rideout as modified by Prior Art Figure 1, Morita and Bassirat teaches a bandpass filter to filter the received RF analog signal and output a filtered RF analog signal, an amplifier to amplify the filtered RF analog signal with a gain and output an amplified RF analog signal, a frequency converter to converter the amplified RF analog signal to the base band signal (see Prior Art Figure 1).

Allowable Subject Matter

6. Claims 4-6, 25 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to claims 1-13 and 15-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye, can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.


**HANH PHAN
PRIMARY EXAMINER**